

REMARKS

Claims 1-20 are pending in this application. Claims 3 and 10-13 have been canceled without prejudice and claims 1, 4, 9, 14, 15, 16, 19 and 20 have been amended by the present Amendment. Amended claims 1, 4, 9, 14, 15, 16, 19 and 20 do not introduce new matter.

RULE 37 C.F.R. § 1.105 REQUIREMENT FOR INFORMATION

The Examiner requests the publication date of KR-1998-42709. The publication date of KR-1998-42709 is May 6, 2000. Applicants note, however, that in contrast to the Examiner's assertions, KR-1998-42709 does not appear to include a Figure 9. Applicants have included copies of KR-1998-42709 and the abstract translation thereof as part of an Information Disclosure Statement filed herewith. The copies were obtained from the website of the Korean Intellectual Property Office, <http://eng.kipris.or.kr/Search/Search.html>.

OBJECTION TO CLAIM 14

The Examiner objects to claim 14 under 37 C.F.R. § 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Applicants have amended claim 14 to state that in addition to the longitudinal opening in the pixel electrode recited in claim 9, the domain defining member further includes a plurality of openings in the pixel electrode and in the common electrode arranged laterally along a longitudinal direction. Also, the limitation of claim 14 reciting "at least one opening disposed in a direction transverse to the longitudinal direction" in and of itself requires that there be another opening in addition to the longitudinal

opening since the longitudinal opening, which is disposed in the longitudinal direction, cannot be disposed "transverse to the longitudinal direction".

Accordingly, Applicants respectfully submit claim 14 further limits the subject matter of claim 9 by requiring additional openings. As such, Applicants respectfully request that the Examiner withdraw the objection to claim 14 under 37 C.F.R. § 1.75(c).

REJECTIONS UNDER 35 U.S.C. § 112

CLAIMS 1 AND 2

Reconsideration is respectfully requested of the rejection of claims 1 and 2 under 35 U.S.C. § 112, first paragraph, as being based on a disclosure that is not enabling, claim 3 having been canceled. The Examiner maintains that the rejected claims omit matter disclosed to be essential to the invention. Specifically, the Examiner maintains that the claims fail to include the "features of the LCD which enable 'a quotient greater than or equal to about 0.8 for all viewing angles'".

The Examiner's criticality analysis under the first paragraph of 35 U.S.C. § 112 is misplaced. In Genentech, Inc. v. Novo Nordisk A/S, 108 F.3d 1361, 42 U.S.P.Q.2d 1001 (Fed. Cir.), cert. denied, 118 S.Ct. 397 (1997), the Federal Circuit held that the scope of claims must bear a reasonable correlation to the scope of enablement provided by the disclosure.

Independent claim 1 recites "a voltage range for yielding a quotient greater than or equal to about 0.8 . . . for all viewing angles". This recitation in claim 1 is coextensive with the recitation in the specification, which states that "[a]ccording to a preferred embodiment of the present invention, the voltage of the first gray is determined in a voltage range which gives the contrast ratio to be equal to or larger than about 0.8 in all

viewing directions when compared to the contrast ratio when applying 0 volt." See page 11, lines 9-12. The specification goes on to state that the voltage range depends on the type of liquid crystal panel and teaches a first gray voltage range of about 0 to about 1.4 volts as a preferred example. See page 11, lines 12-16, page 14, lines 1-4 and Fig. 9.

The Examiner maintains that independent claim 1 fails to include the features of the LCD that enable the preferred contrast ratio relationship of greater than 0.8. However, a recitation of such features in independent claim 1 is not required. See In re Goffe, 542 F.2d 564, 567, 191 U.S.P.Q. 429, 431 (C.C.P.A. 1976) (stating that features which are merely preferred are not considered critical). Consistent with the scope of the specification, the claimed 0.8 limitation suffices to satisfy the enablement requirement because the disclosure maintains that the 0.8 limitation is applicable to different types of liquid crystal display panels. Therefore, a recitation of specific features is unduly limiting and inconsistent with the disclosure. Indeed, since structure is discussed in connection with a preferred first gray voltage range, the features of the LCD are not considered to be critical. See id.

In support of his enablement rejection, the Examiner mischaracterizes Applicants' remarks made in response to previous Office Actions. In the remarks, Applicants never made any assertion regarding the applicability of the claimed 0.8 limitation to different types of LCDs, nor do Applicants' arguments suggest such an assertion.

Applicants' arguments were confined to the disclosure of U.S. Patent No. 5,298,199 ("Hirose") and its failure to teach or suggest the claimed 0.8 limitation. Applicants' statements were limited to a discussion of Hirose's failure to recognize the

claimed relationship between a first gray voltage range and the 0.8 value for all viewing angles. Applicants' comments were confined to an analysis the V-T curve shown in Hirose, which relates to a single viewing angle.

In contrast to the Examiner's assertions, Applicants are not now and have never made any characterizations concerning the structure of Hirose or its applicability to the embodiment of claim 1. Applicants argued that the claimed relationship is not taught or suggested by the reference because the V-T curve is limited to showing one voltage for zero transmission at one viewing angle. Applicants' further comments were not on the applicability of the structure of Hirose to the claimed embodiment, but merely illustrated how linking the one voltage of the V-T curve to other viewing angles does not result in the claimed relationship. See August 23, 2004 Response at 9-10. Indeed, as evidenced by Applicants' remarks thereafter, Applicants were simply arguing that the Examiner was overreaching to get more out of Hirose than what is disclosed and that Hirose does not disclose any relationship between viewing angles and a first gray voltage range. Any conclusions by the Examiner to the contrary are unsupported by the record and the specification.

Therefore, because the scope of the claimed invention is not broader in scope than the disclosed invention and essential subject matter has not been omitted, the Examiner's rejection of claims 1 and 2 (claim 3 having been canceled) under 35 U.S.C. § 112, first paragraph, as being based on a disclosure that is not enabling must be withdrawn.

CLAIMS 9, 14 AND 15-20

Reconsideration is respectfully requested of the rejection of claims 9, 14 and 15-

20 under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement because the claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The test for enablement is whether one skilled in the art could, at the time of the invention, make and use the claimed invention based on the disclosure and the information known in the art without undue experimentation. Applicants maintain that the claims 9 and 15 and claims 14 and 16-20 respectively dependent thereon satisfy the test for enablement.

Briefly, claim 9 has been amended to include the language "when the aperture in the common electrode is projected on the pixel electrode", claims 15 and 20 have been amended to include the language "when the opening in the common electrode is projected on the pixel electrode", and claim 19 has been amended to include the language "when the at least two openings in the common electrode are projected on the pixel electrode".

Applicants have amended claims 9, 15, 19 and 20 to clearly refer to the fact that, although formed on separate substrates, the openings or apertures in the common electrode define partitions or edges when projected on the pixel electrode, as described and depicted in the specification and drawings. See page 9, lines 11-13 (explaining how apertures in the common electrode divide the pixel electrode into a plurality of areas to define domains); see also page 11, lines 1-6 and FIG. 2 (reference numerals 212, 214, 216, 230, 240 and 250). Applicants submit that these amendment do not add new matter to the application because the specification provides an enabled description

of the openings and apertures in the common electrode and their relationship to the pixel electrode.

Applicants, therefore, respectfully request that the Examiner's rejection of claims 9, 14 and 15-20 under 35 U.S.C. § 112 for lack of enablement be withdrawn.

CLAIMS 14 And 16

Reconsideration is respectfully requested of the rejection of claims 14 and 16 under 35 U.S.C. § 112 as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Applicants have amended claim 14 to recite that the plurality of openings are formed in the pixel electrode and the common electrode.

With respect to claim 16, Applicants respectfully submit that there appears to be proper antecedent basis for "the upper portion" since claim 15 recites "an upper portion of the pixel electrode". However, to be clear, Applicants have amended claim 16 to recite "the upper portion of the pixel electrode".

In view of the foregoing, Applicants respectfully request that the Examiner's indefiniteness rejection of claims 14 and 16 under 35 U.S.C. § 112 be withdrawn.

REJECTIONS UNDER 35 U.S.C. § 102

Reconsideration is respectfully requested of the rejection of claims 1-2 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,298,199 ("Hirose"), claim 3 having been canceled.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference."

Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051,

1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the . . . claim." Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989); M.P.E.P. § 2131.

Applicants respectfully submit that Hirose does not disclose or suggest a voltage value . . . within a voltage range for yielding a quotient greater than or equal to about 0.8 and less than about 1 for all viewing angles, as recited in amended claim 1. Therefore, for at least this reason, Applicants respectfully submit that claim 1 is not anticipated by Hirose. In addition, for at least the reason that claim 2 depends from claim 1, claim 2 is also not anticipated by the cited reference.

The Examiner maintains that Hirose discloses an infinite quotient, "which is infinitely greater than 0.8." However, amended claim 1 excludes a voltage range which results in a quotient greater than 1. Accordingly, Applicants respectfully submit that Hirose does not teach or suggest the embodiment recited in amended claim 1.

As such, Applicants respectfully submit that claim 1 is not anticipated by Hirose. For at least the reason that claim 2 depends from claim 1, claim 2 is also submitted not to be anticipated by the cited reference.

Therefore, Applicants respectfully request that the Examiner withdraw the rejection of claims 1-2 under 35 U.S.C. § 102(b), claim 3 having been canceled.

Reconsideration is respectfully requested of the rejection of claims 15-20 under 35 U.S.C. § 102(b) as being anticipated by JP 11-352490 ("Kim").

Applicants respectfully submit that Kim does not disclose or suggest the voltage value of a first gray is equal to or lower than 1.4 V, as recited in amended claim 15. Therefore, for at least this reason, Applicants respectfully submit that claim 15 is not

anticipated by Kim. In addition, for at least the reason that claims 16-20 depend from claim 15, claims 16-20 are also not anticipated by the cited reference.

Therefore, Applicants respectfully request that the Examiner withdraw the rejection of claims 15-20 under 35 U.S.C. § 102(b).

REJECTIONS UNDER 35 U.S.C. § 103(a)

Reconsideration is respectfully requested of the rejection of claims 4-8 under 35 U.S.C. § 103(a) as being unpatentable over Hirose in view of U.S. Patent No. 6,256,082 ("Suzuki-2"). Applicants respectfully submit that amended claim 1 is patentable over the cited references, and that for at least the reason that claims 4-8 depend from claim 1, claims 4-8 are also patentable over the cited references. Applicants also submit that claim 6, in its own right, is patentable over the cited references.

Applicants respectfully submit that Hirose, when taken alone or in combination with Suzuki-2, fails to teach or suggest a voltage value . . . within a voltage range for yielding a quotient greater than or equal to about 0.8 and less than about 1 for all viewing angles, as recited in amended claim 1.

As stated above, the Examiner maintains that Hirose discloses quotient "which is infinitely greater than 0.8" and amended claim 1 excludes a voltage range which results in a quotient greater than 1. The addition of Suzuki-2 does not render the claimed feature obvious.

Therefore, it is respectfully submitted that the cited references, when taken alone or in combination, do not disclose or suggest a voltage range for yielding a quotient greater than or equal to about 0.8 and less than about 1 for all viewing angles, as defined in amended claim 1. It is respectfully submitted that it would not have been

obvious to modify Hirose, in view of Suzuki-2, to develop the embodiment of the invention recited in amended claim 1.

Therefore, Applicants respectfully submit that the embodiment of the invention as defined in amended claim 1 is patentable over Hirose, in view of Suzuki-2. For at least the reason that claims 4-8 depend from claim 1, claims 4-8 are also submitted to be patentably distinct over the cited references.

Further, Applicants respectfully submit that the selection of a voltage value of the first gray that is equal to or lower than 1.4 V, as recited in claim 6, is not a matter of determining optimum process condition by routine experimentation. "A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. In re Antonie, 559 F.2d 618, 195 U.S.P.Q. 6 (C.C.P.A. 1977). The cited references do not recognize the voltage value of a first gray as being a function of the claimed contrast ratio relationship. See, e.g., Fig. 9. Therefore, the parameter was not recognized in the art to be a result-effective variable and could not be optimized as the Examiner claims. As such, claim 6, in its own right, is patentable over the cited references.

In light of the above arguments, Applicants respectfully request that the Examiner withdraw the rejection of claims 4-8 under 35 U.S.C. §103(a).

Reconsideration is respectfully requested of the rejection of claims 9 and 14 under 35 U.S.C. § 103(a) as being unpatentable over Kim in view of U.S. Patent No. 4,832,454 ("Walters").¹ Applicants respectfully submit that for at least the reason of the

¹ Applicants note that the Examiner stated that claims 9 and 14 are rejected under 35 U.S.C. § 102(e) as being anticipated by Kim in view of Walters. Applicants have interpreted the rejection as a rejection

amendment to independent claim 9, claim 9 and claim 14 dependent thereon are patentable over the cited references.

The combination of Kim and Walters does not disclose or suggest a liquid crystal display having a liquid crystal layer which is vertically aligned in the absence of an electric field and a voltage value of a first gray which is equal to or lower than 1.4 V, as recited in the amended claim 9.

The Examiner maintains that Kim does not indicate that the voltage of the first gray is less than or equal to 1.4 V and relies on Walters to cure this deficiency.

However, unlike the claimed liquid crystal display having a liquid crystal layer which is vertically aligned in the absence of an electric field, Walters describes a control circuit for an LCD having twisted nematic liquid crystal. See Walters, col. 1, lines 17-30.

The Examiner asserts that "Walters teaches that it is standard practice in the art to use a voltage less than or equal to about 1.4 V for the first gray voltage". However, since Walters is concerned with twisted nematic liquid crystal, the lowest voltage in Walters is applied to display the brightest image, which is the highest gray. On the contrary, the claimed embodiment concerns the lowest gray voltage, which is applied to display the darkest image. Therefore, Walters cannot be used to teach a voltage of a first gray that is less than or equal to 1.4 V.

Moreover, because of the differences between Walter and Kim, Applicants respectfully submit that there is no motivation to modify Kim with Walters to result in the claimed embodiment. "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." In re Mills, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed.

Cir. 1990); M.P.E.P. § 2143.01. As stated above, Walters is concerned with twisted nematic liquid crystal. Therefore, one with ordinary skill in the art would not be motivated to combine Walters with Kim to develop an LCD with vertically aligned liquid crystal, wherein a voltage value of a first gray is equal to or lower than 1.4 V.

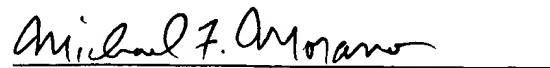
As such, it is respectfully submitted that the cited references, when taken alone or in combination, do not disclose or suggest the embodiment recited in amended claim 9, and it is respectfully submitted that it would not have been obvious to modify Kim, in view of Walters, to develop same.

Accordingly, Applicants respectfully submit that the embodiment of the invention as defined in amended claim 9 is patentable over Kim, in view of Walters. For at least the reason that claim 14 depends from claim 9, claim 14 is also submitted to be patentably distinct over the cited references.

Therefore, Applicants respectfully request that the Examiner withdraw the rejection of claims 9 and 14 under 35 U.S.C. § 103(a).

An early and favorable consideration is earnestly solicited. If the Examiner has any further questions or comments, the Examiner may telephone Applicants' Attorney to reach a prompt disposition of this application.

Respectfully submitted,


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